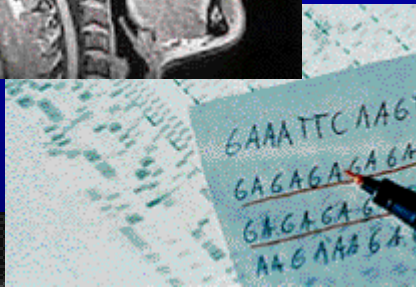# Technology Integration in Navy Medicine
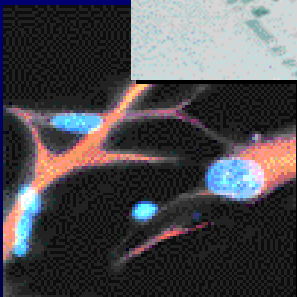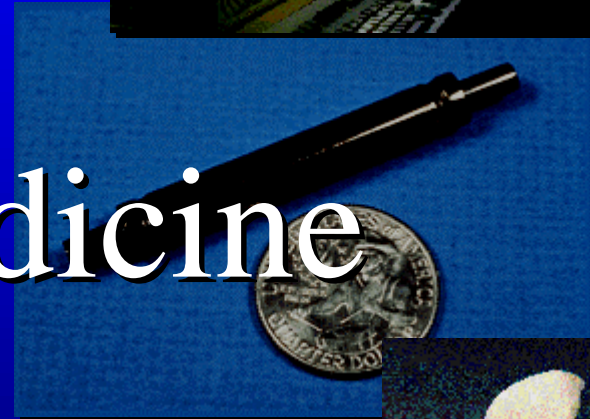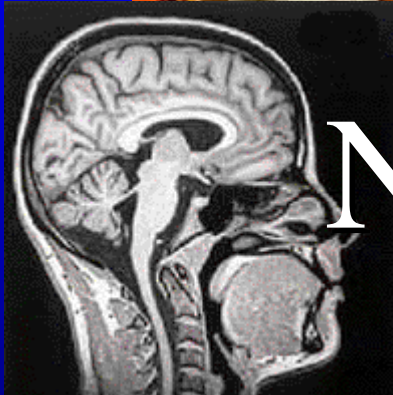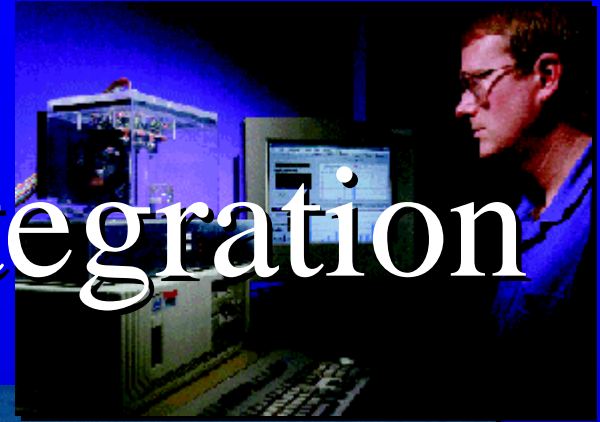
C. Forrest Faison III, M.D.

CDR MC USN

Why technology is important

- Critical enabler
  - Enhance efficiency, effectiveness
  - Improve outcomes
  - Improve readiness
- Standardize healthcare benefit
- Move us to Population Health

"We must examine our processes, embrace <u>appropriate</u> new technology and standardize to limit inventory and take advantage of volume discounts".

VADM Richard A. Nelson

Buying, Developing, Maintaining Medical Technology…...

Arleigh Burke Class Destroyer

● $ 1.2 B

What the MHS spends **ANNUALLY** on medical technologies

Navy's share: > $100M

The Track Record: mirrors others

Best Alternative?

$37.3M

$100K threshold

$62.5 + M

Standardization?

Bulk Buys?

Maintenance?

LCM?
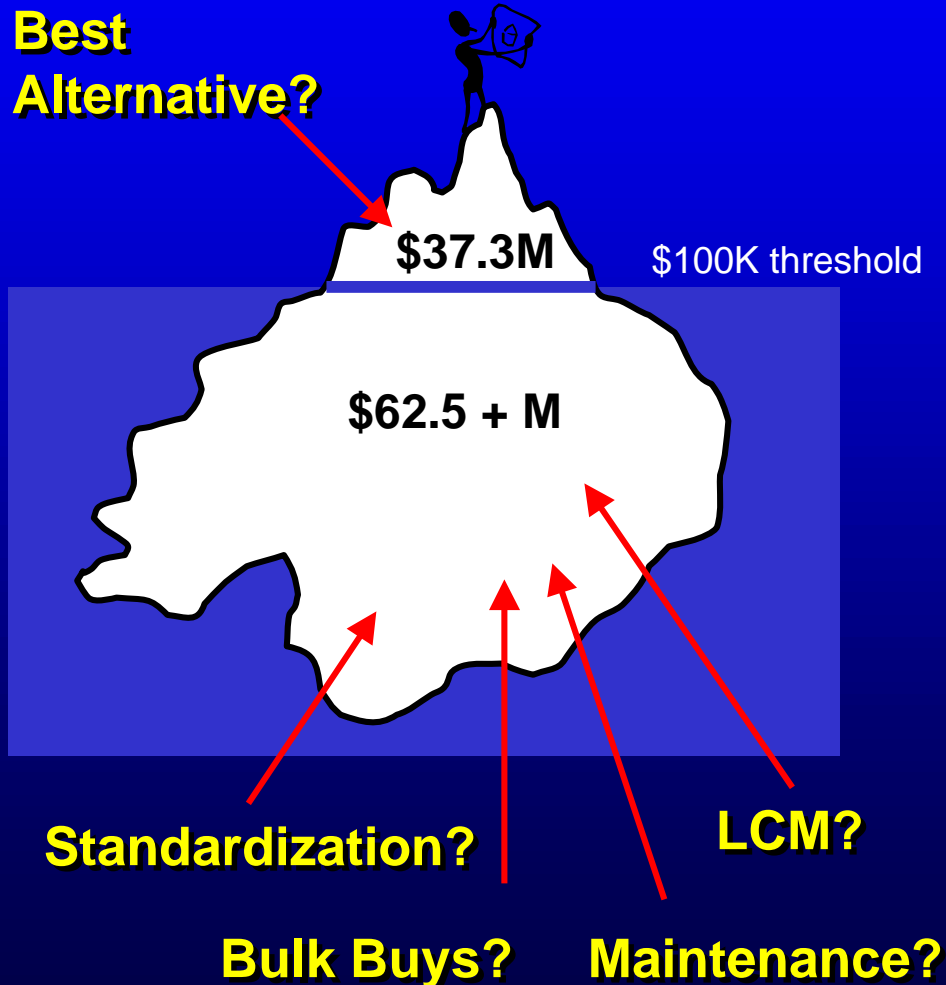
- Large investment
- Multiple managers
- Limited visibility - no "Bird's eye view"
- "Techno-centricity"
- Cross-functional integration lacking
- Collaboratives underutilized
- Influence underutilized

Source: SMART

Ahead: Opportunity or Threat ?
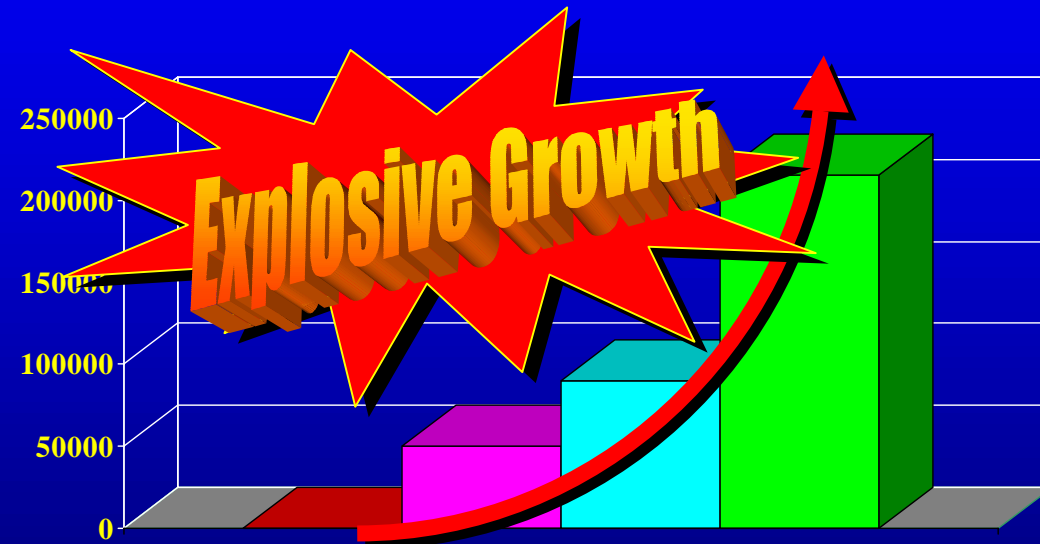
Medical Patents, US Patent Office

- Exploding market
- Limitless options
- Procurement ceilings
- Falling prices
- Valuable Tool, or…..
- Enormous burden

Are we in the best position for the future?

Some challenges, but is it a big deal?

Yes….it is a BIG deal
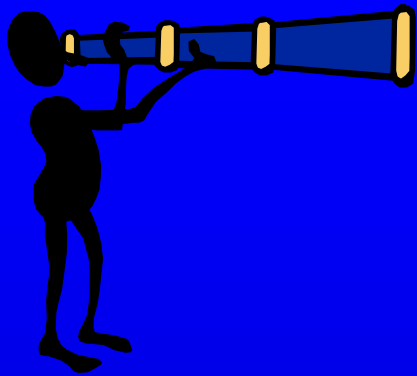
Desired State

- ID, resource to prioritized need
  - Roadmap: Today, PH
- Mission-focused, BCA-based investments
- Optimize integration
- ID cross-functional relationships, constraints
- Optimize collaboratives
- Create technology portfolio: "Bird's eye view"
- Exploit leadership power, influence

Desired State:
Alignment, Prioritization, BCA-guided investments

Bird's eye view

Alignment

Organization's Vision & Mission

Business Goals & Objectives (Business Drivers)

Performance Measurements & Rewards

Prioritization of Initiatives

Business & Organizational Projects

Integrated BCA-guided investments

Roadmap: charting a course
First step to alignment, prioritization

- Dissect mission into discrete capabilities
  - Today's mission
  - Population Health
- ID dependencies, relationships
- Capability: combination of

  Focus on Capabilities not Tools

  - **People**, who have been
  - **Trained**, to do
  - **Processes**, using
  - **Tools** (of which technology is one), supported by
  - **Policies**

Intervention
Our Current Paradigm

Provide Patient Access Engage and Retain Members	Assess Patient Health	Provide Healthcare Intervention (Curative,Preventive,Health Readiness)	Evaluate Quality of Individual Patient Care

Provide Patient Access / Engage and Retain Members

- Determine Pt Costs of Access
- **Arrange Services**
  - -Maintain Schedules
  - -Manage waitlists
  - -Managed referrals
  - -Book/rebook/cancel appointments
  - -Accommodate needs and preferences
  - -Check compliance protocols

Manage Patient Accounts
- -Capture/update insurance information
- -Verify eligibility and coverage
- -Advise on current account status

Determine Where Service to Occur
(Part of Demand Management)

- ER
- Inpatient Facility
- Primary Care Clinic
- Specialty Care Clinic
- Self Care at Home
- Field Hospital
- Remote Service
  (Telemedicine)
- Schedule Health Service
  (Arrange Encounter,Schedule Resources)
- Arrange Transportation
  (Medivac & Ambulance Srvcs)
- Initiate Health Encounter
  (Check-in,Prepare Pt)
- **Manage Patient Encounter**
  - -Check-in patient
  - -Manage patient flow
  - -Check out patient & manage encounter related information
- **Engage and Manage referrals**
  - -Identify need for referral
  - -Ensure appropriateness of referral
  - -Authorize/obtain authorization
  - -Identify and engage care team
  - -Engage external community providers
  - -Communicate relevant information to referral providers
  - -Monitor status of referral

Assess Patient Health

Assess Patient Status
- -Triage patient request for service
- -Obtain relevant tools
- -Diagnose illness

- -Perform speciality consultation upon referral
- -Assess progress against goals
- -Document assessment of patient condition/wellness

Gather Patient Health Data

- Gather Historical Health Hx
  (Encounter PMH, HEAR)
- Gather Current Health Hx
- Perform Physical Exam
- Perform Diagnostic Tests
  (Rad,Lab, Specialty Tests)
- Gather Patient Compliance Info.
- Make Assessment
  (Identify Risk Factors,Make Dx)

Provide Healthcare Intervention

- Develop Care Plan
  - Utilize Personal Knowledge & Experience
  - Utilize Consultations
  - Utilize Reference Literature
  - Utilize CPGs
  - **Develop Care Plan**
    - -Obtain care management protocols
    - -Establish goals for patient recovery
    - -Address self management profile
    - -Identify care interventions that are due
    - -Initiate care episode and engage team
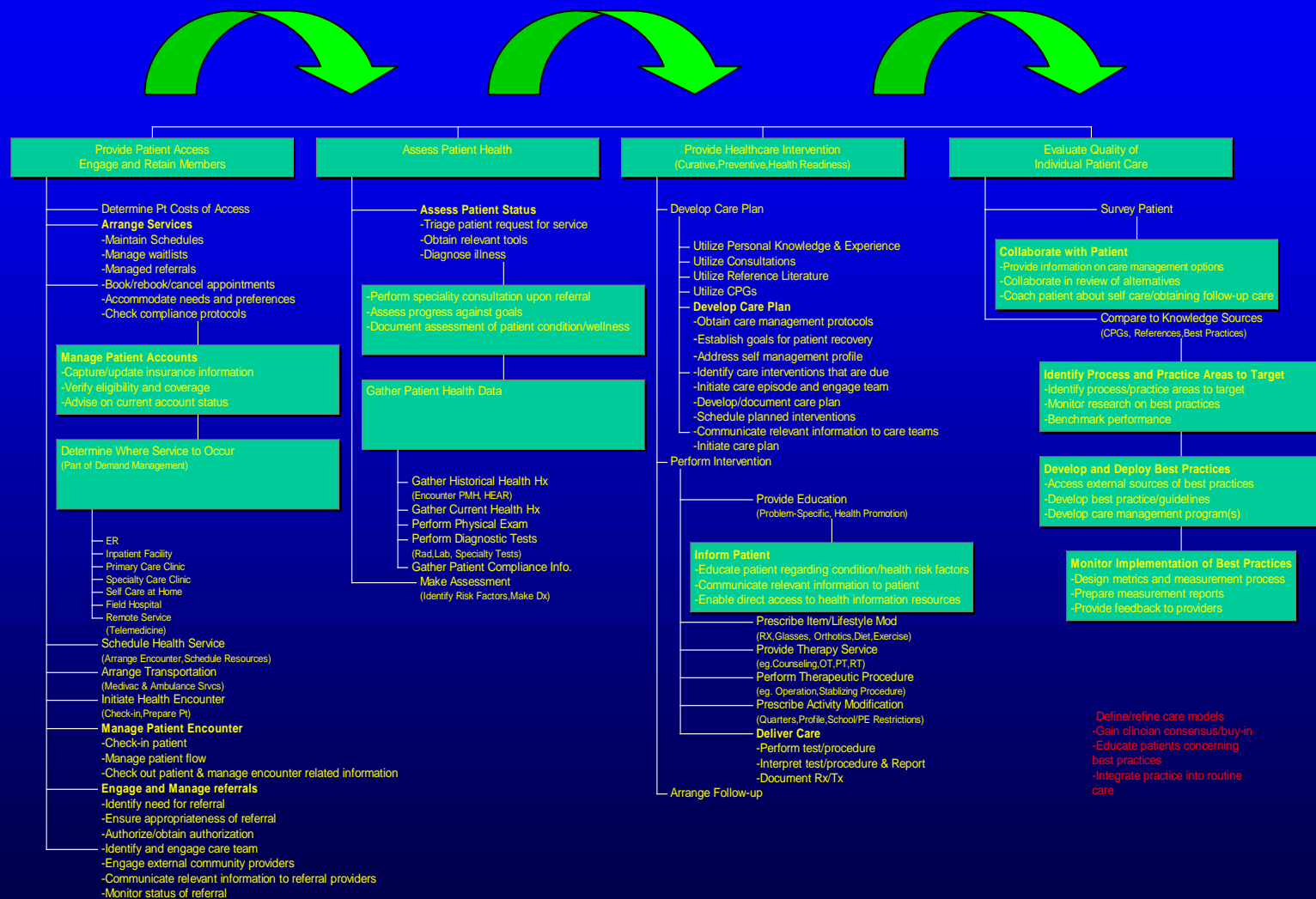   - -Develop/document care plan
    - -Schedule planned interventions
    - -Communicate relevant information to care teams
    - -Initiate care plan
- Perform Intervention

  - Provide Education
    (Problem-Specific, Health Promotion)

  Inform Patient
  - -Educate patient regarding condition/health risk factors
  - -Communicate relevant information to patient
  - -Enable direct access to health information resources

  - Prescribe Item/Lifestyle Mod
    (RX,Glasses, Orthotics,Diet,Exercise)
  - Provide Therapy Service
    (eg.Counseling,OT,PT,RT)
  - Perform Therapeutic Procedure
    (eg. Operation,Stablizing Procedure)
  - Prescribe Activity Modification
    (Quarters,Profile,School/PE Restrictions)
  - **Deliver Care**
    - -Perform test/procedure
    - -Interpret test/procedure & Report
    - -Document Rx/Tx
- Arrange Follow-up

Evaluate Quality of Individual Patient Care

- Survey Patient

Collaborate with Patient
- -Provide information on care management options
- -Collaborate in review of alternatives
- -Coach patient about self care/obtaining follow-up care

- Compare to Knowledge Sources
  (CPGs, References,Best Practices)

Identify Process and Practice Areas to Target
- -Identify process/practice areas to target
- -Monitor research on best practices
- -Benchmark performance

Develop and Deploy Best Practices
- -Access external sources of best practices
- -Develop best practice/guidelines
- -Develop care management program(s)

Monitor Implementation of Best Practices
- -Design metrics and measurement process
- -Prepare measurement reports
- -Provide feedback to providers

- Define/refine care models
  - -Gain clincian consensus/buy-in
  - -Educate patients concerning best practices
  - -Integrate practice into routine care

Strategic

Prevention
The Foundation for Population Health

Define Population	Gather Population Health Risk Data	Assess Population Health Risk	Provide Population Health Intervention	Evaluate Risk Reduction Effectiveness

Define Population
- Determine Population
  (eg. Deployed troops,TRICARE Enrollees)
- Reserve (Active & Ready)
- TRICARE (All Categories)
- Medicare

Gather Population Health Risk Data

Assess Patient Health/Health Risks
- Obtain relevant assessment tools
- Obtain & review health history
- Identify hereditary/enviornmental risk

Gather Population Data
- Fitness Level
- Health Risk Assessment Surveys
  (HEAR)
- Medical/Dental Records
- Health Readiness Data/Status

Gather Environmental Data
- Endemic Disease Risks
  (Air,Water,Food,Soil)
- Bio-Chem Warfare Risks

Gather Occ/Industrial Risk Data

Assess Patient Health/Health Risk
- Assess lifestyles and Self Management Capability
- Assess compliance and socialenonomic risk
- Obtain patient self assessment

Assess Population Health Risk
- Identify High Risk Groups
- Assess Health Readiness

Develop Wellness Plan
- Obtain relevant protocols/guidelines
- Establish goals for wellness
- Address self management profile
- Identify wellness interventions that are due
- Schedule planned interventions
- Develop/document wellness plan
- Communicate relevant information to care teams
- Initiate wellness plan

Assess Member/Assign to Care Model
- Match patient with care model
- Assemble prior medical history
- Contact members with provider team
- Reassess/update care model

Provide Population Health Intervention
- Develop Risk Reduction Plans
  (Utilize CPGs,Best Practices)
- Perform Risk Reduction Intervention
  (Medical,Dental & Mental Health)

  - Disease Management Initiatives
    (Promote CPGs)
  - Health Promotion Education
  - Specific Prevention Programs
    (eg. PPIP)
  - Wellness Centers
  - Lifestyle-Mod Services
  - Workplace Modifications
  - Vaccination Programs
  - Arrange Clinical Appts/Srvcs

Deliver Welliness Related Services
- Coach members in compliance and self management
- Deliver wellness related services
- Document wellness related services
- Monitor member understanding and compliance

Empower Patient
- Deliver education

Coach member in compliance and self care
- Schedual planned interventions
- Communicate relevant information to care teams
- Initiate care plan

Evaluate Risk Reduction Effectiveness
- Perform Outcomes Measurement
- Perform Variance Analysis
- Assess Conformance
  (eg. to CPGs, PPIP,Lifestyle Mods)

Maintain Clinical Practices and Processes
- Develop/maintain policy and procedures
- Disseminate clinical
- Monitor compliance
- Comply with requirements of regulatory agencies

Ensure Quality/Appropriateness
- Manage reported incidents
- Credential providers
- Perform concurrent review
- Monitor IDN performance against standards
- Monitor quality and outcome of care
- Obtain accreditation
- Document quality information
- Resolve quality problems

Strategic

Supporting Services
The Mortar for our system

Manage Finances & Contracts

- Perform Financial Planning
  (eg. POM Submission)
- Determine & Manage Operational Budgets
- Perform Accounting
  - Perform Financial Accounting
  - Perform Cost Accounting

Cash Management
- Reconcile (electronic) fund transfer
- General accounting
- Manage budget

Billing
- Generate HCFA 1500/UB92
- Generate TPC
- Generate patient account balance due

Accounts Payable
- Pay Vendors
- Pay Providers

Accounts Receivable
- Reconcile patient account
- Process reimbursment

- Assess Enrollment Based Capitation
- **Capitation Management**
  - Determine capitation services/rate
  - Conduct monthly financials calculation & reconciliation
  - Distribute payments & perform billing activities
- Manage Contracts
  - Manage Initial Contracts
  - Manage Bid-Price Adjustments
  - **Contract Management**
    - Manage contract terms and conditions
    - Provide enhanced billing and collection functions
    - Tract profitability of managed care contracts (e.g. TRICARE)
    - Model cost of managed care contracts (e.g., BPA)
- Perform Cost Containment Initiatives
  - Demand Management
  - Reengineering for Efficiency
  - Procurement Management

Manage Resources & Logistics

- Facilities
- Materiel

Provide Comprehensive Asset Management

- Personnel
  - Train & Certify/Credential
    (Primary Ed, Continuing Ed, Readiness Training)
  - **Mange Human Resources**
    - Manage staffing levels
    - Comply with State/Federal employment & payroll regulations
    - Identify skill & service gaps
    - Develop employees
    - Develop training programs
    - Establish incentive programs
    - Ensure performance reviews are conducted
- Information Infrastructure
  - Data Capture/Display Devices
    (PCs, Handheld Devices)
  - Data Delivery Mechanisms
    - WANs
    - LANs
    - Portable Media
      (Paper, Floppy Disks, PICs)
  - Data Storage Mechanisms
    - Paper Records
    - Databases
    - Portable Electronic Media
      (Floppy /zipDisks, PICs)

Provide/Comply with Legal
- Support regulatory compliance
  Maintain risk management programs
- Maintain risk management programs

Manage Knowledge

- Capture, Track/Monitor, Analyze
  & Communicate Information
  - Individual Pt. Status & Care
  - Population Data
    - Population Health Data
    - Envirnomental Data
    - Occup./Industrial Data
    - Health Readiness Data
  - Finance & Contract Data
  - Resource Data
    - Facilities
    - Materiel
    - Personnel
  - MHS (Internal) Readiness
- Develop and Maintain I/S Infrastructure
  - Acquire/develop systems/applications
  - Provide technical support
  - Maintain turnaround time

Provide Application Support
- Manage and maintain data sources
- Manage information security
- Manage data integrity & integrate data

- Manage Corporate Documents
- Provide Access to Reference Data
  (CPGs, Literature, Research)
- Perform Research & Development
  - Clinical Research
    (Clinical Trials, CPGs/Protocols/Basic Research)
  - Technology Research
    (Info systems, Info Tech, Medical Technologies)
  - Business Research
    (FEA's.Market Surveys, Workflow Analyses)

Provide Customer Services
(Patients, Line Commanders, Congress)

- Analyze Customer Needs
- Develop Service Plans
- Market Services
  (Tricare, FHP)
- Enroll Customers
- Assure Satisfaction
  - Assess Satisfaction
    (Surverys, Complaint Channels)
  - Develop Improvement Plans
- **Orient New Member**
  - Provide initial outreach/orientation
  - Profile member needs and preferences
  - Provide orientation materials (e.g., ID Card)
  - Coach in PCM selection
  - Conduct initial risk screening/stratification
- **Obtain and Retain Members**
  - Identify new members
  - Perform/update emrollment/resistration
  - Verfy/update contact information
  - Provide caregiver contact information
  - Notify caregiver of key changes
- **Manage Patient Inquaries & Member Ser.**
  - Respond to inquires
  - Solve service issues
  - Enable direct access to info.&services
- **Gain/Retain Members/patients**
- **General Administrative Management**
- **Collaborate with Patient**

Strategic

Population Health

The Road to the Future

Population Health

Phase I	Phase II	Phase III	Phase IV

Phase I

(1) Identify Population and Define Population Health
- Determine Population
  (eg. Deployed troops,TRICARE Enrollees)
- Determine Demographic Profiles
  (eg. Age,Gender,Service/Unit,Location)
- Define Population Health Success

(11) Logistics and Readiness
- Provide Information Infrastructure

(6) Logistics and Readiness
- Verify Eligibility
- Determine Where Service to Occur
  (Part of Demand Management)
- Determine Pt Costs of Access
- Schedule Health Service
  (Arrange Encounter,Schedule Resources)
- Arrange Transportation
  (Medivac & Ambulance Srvcs)
- Initiate Health Encounter
  (Check-in,Prepare Pt)

(10) Manage Finances and Contracts
- Perform Accounting
  (Financial & Cost Accounting)
  --Manage Enrollment Based Capitation
- Manage Contracts
  (eg. Bid-Price Adjustments)
- Perform Cost Containment Initiatives
  (eg.Demand Management,Reengineering for Efficiency)

(13) Provide Customer Service
- Enroll Customers
- Analyze Customer Needs
- Develop Service Plans
- Market Services
  (Tricare, FHP)
- Assure Satisfaction

Phase II

(2) Gather Population Health Risk Data
- Gather Population Data
- Gather Environmental Data
- Gather Occ/Industrial Data

(3) Assess Population Health Data
- Identify High Risk Groups
- Assess Health Readiness

Phase III

(10) Manage Finances & Contracts
- Perform Financial Planning
  (POM Submission)
- Manage Operational Budgets

(11) Logistics, Readiness, Portfolio Mgmt , Training
- Facilities
- Personnel
  --Train & Certify/Credential
  (Primary Ed, Continuing Ed,Readiness Training)
- Materiel

(12) Knowledge Transfer
- Capture,Track/Monitor,Analyze,Communicate Data
- Manage Corporate Documents
- Provide Access to Reference Data
  (CPGs,Literature,Research)
- Perform Research & Development

(4) Prioritize and Deliver Preventive Clinical Care
- Develop Risk Reduction Plans
- Perform Risk Reduction Intervention

(7) Assess Patient Condition
- Gather Patient Health Data
- Make Assessment

(8) Provide Evidenced-Based Healthcare Intervention
- Develop Care Plan
- Perform Intervention
- Arrange Follow-up
- Assess Compliance

Phase IV

(5&9) Evaluate Outcomes
- Perform Outcomes Measurements
- Compare to Knowledge Sources
- Perform Variance Analysis
- Assess Conformance
- Conduct Patient Provider Survey

(13) Provide Customer Service
- Provide Incentives Linked to
  Pop Health Improvement

For each phase, work sections concurrently
Complete all phase sections before moving to next phase **

Strategic

Why a roadmap?

Corporate planning: EBCT example

- Why important?
- How exactly does it contribute to the mission?
- How exactly does it contribute to PH?
- On what does EBCT depend?
- What depends on EBCT? What changes?
- Where else could resources have been applied?
- Why was EBCT most important?
- Who gets it first and how?
- How will I know its successful?

Why a roadmap?

*External threats to Navy Medicine: **What's our plan?***

- MHS Strategic Plans misaligned
  - Multiple investment managers working off different documents/interpretations of same document
  - Changing prioritization criteria
- Navy Medicine dependent on several MHS initiatives
  - Track record: late, over-budget, misses the mark
  - Program managers may not understand Navy requirements
- R&D initiatives
  - ONR relationship
  - Army as EA for medical R&D
- Resourcing shortfalls
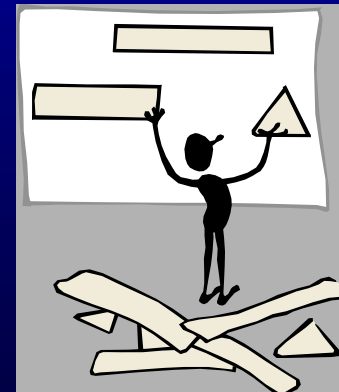
MHS Direction/Priorities: Misaligned

Summary: Strategic Plans Side By Side 29 Jan 1999

National Military Strategy Defense Security Planning Guidance Joint Vision 2010; QDR 97	1998 Jt Warfighting Science & Tech Plan; Jt Strat Capabilities Plan; Hlth Spt Planning Guidance	FHP Capstone Document	MHS Strategic Plan 98-03	Medical Programming Guidance 00-05	Medical Readiness Strategic Plan 98-04
Goals and Objectives					
1. Know, in near-real-time, the location of each person.	*person/patient	*patient	*patient	N/C	*patient
2. Know, in near-real-time, the physical status of each person.					
3. Know, in near-real-time, the training status of each person.					
4. Know, in near-real-time, info on equipment/supplies.					
5. Know, in near-real-time, location/readiness of each unit.					
6. Respond to two overlapping major theater wars, humanitarian assistance, peacekeeping, and disaster relief.					
7. Promote forward stationing.					
8. Operate as a component of a joint, consigned, or multi-national force anywhere in the world.					
9. Prepare for weapons of mass destruction.					
10. Achieve joint operations for seamless integration.					
11. Ensure Reserve components are full spectrum participants.					
12. Serve as role model to emerging democracies.					
13. Maintain superior military forces.					
14. Train quality people.					
15. Train and exercise with allies and friends.					
16. Sustain the fighting forces with proper support forces.					
17. Sustain existing systems.					
18. Protect information infrastructure from tampering.					
19. Pursue a focused modernization effort.					
20. Reengineer, streamline, downsize, consolidate, computerize, and commercialize support functions.					

* Consider addressing functionally in future edition of plans   N/C No recommended change

Red = gap, inconsistency, contradiction

Working the Roadmap

- Answer the Questions
- Plan for External Threats
- Methodology
  - Systematic
  - Objective
  - Repeatable
  - Adaptable
  - Validated

TIBOD Methodology

- Adaptation of best of breed
  - Navy Medicine BCA
  - Army DTLOMS
  - USAF PM/SP
  - Best industry practice
- Mission-focused, BCA-based
- Answers the questions
  - Systematic, objective, verifiable, repeatable

Methodology identifies…...

- Process redesign opportunities
- Technology investments/alternatives
- Policy issues
- Metrics
- Constraints
- Leadership issues
- Resource requirements
- POM / Deployment Strategy

Methodology sections

- Goal definition
- Measures of Success
  - GAO Balanced Scorecard
- Required settings
- Process Redesign opportunities
- Analysis of Alternatives
  - non-technical solutions
- Preferred solutions
  - market surveys/technical analysis

Methodology sections (cont)

- Financial analysis
  - Navy Medicine spreadsheet
- Cost containment strategies
  - Resource sharing opportunities
- Policy issues
  - Staffing
  - Legislative
  - Local issues (SOFA, etc)

Methodology sections (cont)

- Constraints
  - Critical dependencies / Strategies
- Intangibles
  - Marketing
  - Politics
- Deployment plan
- Sustainment plan
- POM strategy / Resource requirements
- Leadership issues

Cross-functional assessment

- Map recommendations to overall mission
  - current mission
  - future trajectory: PH
- Identify cross-functional relationships
- Identify potential resourcing areas
- Identify constraints
- Maintain investment portfolio

Leadership Role

Three part methodology provides an objective basis for ….

- Maintaining investment portfolio
- Balancing current and future mission requirements
- Identifying cross-functional impacts

Planning with a vision/ navigating with a chart

Organization's Vision & Mission

Business Goals & Objectives (Business Drivers)

Performance Measurements & Rewards

Prioritization of Initiatives

Business & Organizational Projects

Leadership: Navigating with a chart

- CEO Tool: Portfolio "Bird's eye view"
  - Coordinate actions
  - Resource advocacy
  - Corporate planning/strategy
- Active involvement: best industry practice
  - Optimize power, influence
  - Champion change management
  - Exploit collaboratives
  - Speed implementation

Organization's Vision & Mission

Business Goals & Objectives (Business Drivers)

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Business & Organizational Projects

Why Leadership involvement critical

MHS experience

- Change is difficult
- Organizational improvement may not be people's primary motivating factor
- Middle management is the key to success
  - executioners of the vision
  - pace/intensity of execution determines success
  - ricebowl owners
- Leadership without accountability changes nothing

In summary

- Technology critical to Navy Medicine
- Systematic, objective planning essential
- Roadmap, methodology represent best industry practice
- Leadership involvement paramount

Organization's Vision & Mission

Business Goals & Objectives (Business Drivers)

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Business & Organizational Projects

Technology

What the past tells us…..

"Automobiles are more or less of a pleasure vehicle for good roads, their perfection not being such as to warrant the physician who purchases one in selling his horse."

Dr. Charles Mayo, 1901

"Permit me to suggest the superiority of the telephone over the ordinary stethoscope in cases where the latter instrument was required"

F.H. Sanders, 1876

Questions?

"The newest innovations and technologies have begun to alter how we conduct business in ways not foreseeable even five years ago. Those that can successfully adapt will thrive while the others will be left to wonder what happened."

Alan Greenspan, 1998

C. Forrest Faison III, M.D.
CDR MC USN
(301) 319-1080   cffaison@us.med.navy.mil